Plant Pathology Circular No. 213
June 1980

Fla. Dept. Agric. & Consumer Serv.
Division of Plant Industry

# CARNATION NECROTIC FLECK

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In late October 1978, the virus disease Carnation Necrotic Fleck was detected in carnations in a commercial greenhouse in Denver, Colorado. This was believed to be the first known occurrence of the disease in the United States; however, the disease was detected earlier in California but was not reported immediately. Previously, it had been reported only in Japan, Israel, and Italy (1). Subsequent surveys found the disease in carnation propagation greenhouses in Ohio.

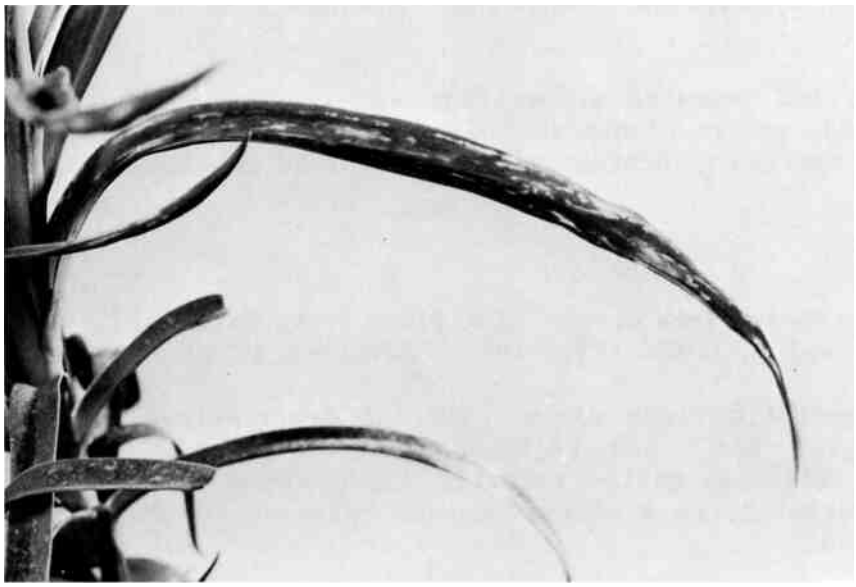

Fig. 1. Necrotic fleck symptoms on carnation leaves showing characteristic greyish white necrotic streaks.

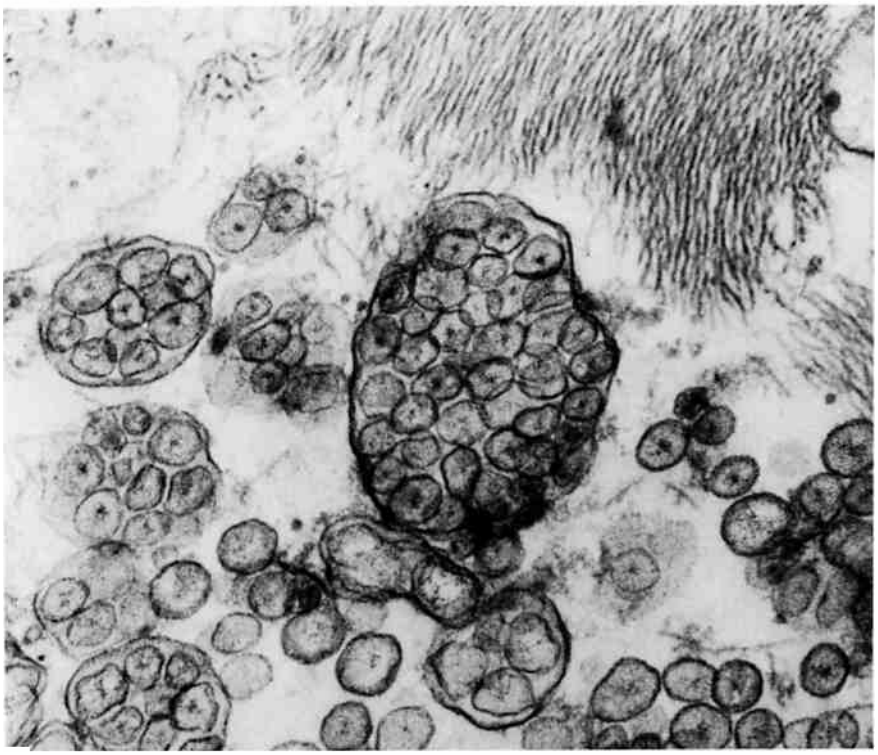

Fig. 2. Masses of flexuous virus particles and vesicular structures in carnation phloem cells (X 77,300).

In January 1980, DPI Agricultural Products Specialists submitted a diseased carnation to the Bureau of Plant Pathology. With the aid of electron microscopy and inclusion body staining, we determined that the carnation was diseased with necrotic fleck.

HOST RANGE AND TRANSMISSION. The only hosts known are three species in the Caryophyllaceae, the most important of which is carnation, Dianthus caryophyllus L. Necrotic fleck virus is often found in mixed infections with other carnation viruses. The disease is distributed most commonly by cuttings made for propagation. The virus may also be transmitted by the green peach aphid (3).

SYMPTOMS. In carnation, the virus causes greyish white necrotic streaks (fig. 1) which are sometimes followed by a purple discoloration of the leaves. The symptoms are often masked at lower temperatures, and mildly infected plants may be symptomless; thus, detection methods other than symptomatology are required. The virus reduces plant productivity and makes the flowers unfit for sale.

DETECTION. The virus may be detected by sap inoculation of Dianthus barbatus L., which produces necrotic local lesions after inoculation.

Staining with Azure A reveals bundles of needle-like paracrystals of the necrotic fleck virus in the phloem tissue. These paracrystals are visible using standard light microscopy.

Electron microscopy reveals long (over 1 um) flexuous particles. Masses of these particles and/or vesicular structures may be observed in some phloem cells (fig. 2).

THE VIRUS. Carnation necrotic fleck was first described in 1973 (4). The virus belongs to a group of viruses which are elongated and thread-like. There are presently 13 viruses in this group, the Closteroviruses, among which are beet yellows, citrus tristeza, and clover yellows (2).

CONTROL. Because infected plants may not show symptoms and may act as disease carriers, propagative material should be indexed to assure that cuttings will be free from carnation necrotic fleck.

SURVEY AND DETECTION. Thorough and repeated inspections are required. If greyish white streaks on the leaves are found, entire plants should be submitted to the Bureau of Plant Pathology for diagnosis. Aphid control to prevent additional spread is a necessity.

LITERATURE CITED.

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4. _____, and K. MITSUHATA. 1973. Carnation necrotic fleck virus. Berichte des Ohara Instituts fur Landwirtschaftliche Biologie Okayama Universitat. 15:195-205. (Rev. Plant Pathol. 53:574, 1974).

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